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**AN ATTEMPTED VALIDATION OF THE
'RÝZL TECHNIQUE' FOR TRAINING
ESP SUBJECTS**

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I. INTRODUCTION

NOTHING could do more at the present time to advance the cause of parapsychology as a science than some method of developing a dependable level of ESP ability in an ordinary volunteer subject. When the senior author read in this *Journal* (Rýzl 1962) about the work going on in Prague towards this end, based on the use of an hypnotic training technique, he was anxious to try and follow it up. Unfortunately, the article in question dealt almost exclusively with the attainments of one remarkable subject Miss J.K. while Rýzl's many subsequent publications are all devoted to the card-guessing exploits of another star subject: Mr P.S. Consequently, although by now over 500 volunteers have undergone some amount of training at Rýzl's hands, over the past 15 years or so, the published literature is still conspicuously lacking in any systematic reports on attempts to validate the 'Rýzl technique'.¹ Our first aim in undertaking the investigation we are about to report was to make good this deficiency.

In the Summer of 1964 J.B., who had kept up a regular correspondence with Dr Rýzl, went to Prague for a month to try and learn at first hand about Dr Rýzl's methods. Unfortunately it

¹ We are not overlooking the excellent 'Cambridge ESP-Hypnosis Experiments 1958-64' (see this *Journal*, 43, June 1965, 77-92) but we presume that the Cambridge group would agree that their investigation, which was begun before the publication of Rýzl's findings, is somewhat tangential to the specific claims of the 'Rýzl technique' as here described.

were then available and, in fact, much of the time was taken up with a joint experiment with the ever-ready P.S. as subject (see *J. of Parapsychol.* 29, 1965, 1.12). But P.S., though he has, by dint of his extraordinarily long career as a high-scorer, become the most celebrated of Rýzl's subjects, is by no means a typical product of the Rýzl stable. Very early on in his career he began to specialize in card-guessing to the exclusion of any other task and soon, moreover, dispensed entirely with hypnosis. Yet, the 'Rýzl technique', as we are here using this expression, is concerned primarily with clairvoyance of what might be called the 'eyeless sight' variety as distinguished from the familiar card-guessing kind, that is to say the subject, when successful, is supposed to experience a *quasi* visual percept of the target object, he does not just make a verbal response that happens to be correct.

The Rýzl technique appears to involve two essential stages:

- (i) Repeated hypnotic sessions during which the subject becomes practised at experiencing to order vivid visual hallucinations.¹
- (ii) Further hypnotic sessions during which the subject is encouraged to try ascertaining selected target objects which should now give rise to veridical hallucinations. Special emphasis at this stage is laid on combining an attitude of intense concentration with an emptying the mind of all distracting thoughts and images to make it as receptive as possible to incoming impressions.

It is important to note that it is not hypnosis as such that is the crux of the 'Rýzl technique' but rather hypnosis as an avenue to the attainment of veridical hallucination. In our investigation we have accordingly deliberately avoided the use of the customary ESP tasks, involving lengthy sequences of rote-guessing, in favour of tasks involving only one trial at a sitting, in the course of which the subject is urged to make an all out effort to visualize the target in question.

During the Autumn Term '64 about 50 volunteer students were each given at least one hypnotic session and from this number 20 were eventually selected to take part in the critical validation experiment reported below. Two criteria only were considered in making the selection: (a) whether the subject was

¹ We are using the term 'hallucination' in keeping with Rýzl's own usage but to avoid misunderstanding the reader should note that we are referring to the type of hallucination which occurs with the eyes closed as in dreams. Some may prefer the expression 'vivid visual imagery'.

sufficiently susceptible to hypnosis and (b) whether the subject was keen enough to agree to come every week for the remainder of the academic year if necessary, for a one-hour session. It may be of interest to note that of our original sample of 50 not more than 4 had to be rejected as being incapable of attaining a trance state within a reasonable period of time. Before the students went away for the Christmas Vacation each of the selected 20 subjects had undergone 5 preliminary training sessions involving a wide variety of hypnotic exercises and some tentative assorted ESP tests.

For the critical validation experiment we planned for the Spring Term, we decided to use both some 'open' tests, i.e. tests in which the target might be anything at all within a certain category, as far as the subject is informed, as well as 'selective answer' tests where the subject knows what the alternatives are. Although the latter have become much more common in parapsychological experimentation, since they lend themselves more readily to precise quantitative evaluation, Rýzl was of the opinion that his subjects performed more successfully on tests of the former sort, presumably because they discourage mere guessing habits in favour of careful attention to the subject's own impressions.

Ordinarily, a validation experiment requires a control group who are matched against the experimental group but who do not receive the special treatment accorded the latter. In the present instance, however, it would obviously be a prodigious waste of time to run such a control group until we were in a position to demonstrate that the experimental group (a) performed at a consistently above chance level and (b) improved as a function of practice. Accordingly, all 20 subjects were assigned to the one experimental group. Before the experiment commenced a full description of our proposals was sent to Dr Rýzl for comment and he, we are glad to say, graciously gave it his blessing. The experiment now to be described occupied all 10 weeks of the Spring Term '65.

II. THE EXPERIMENT

1. Subjects

Twenty student volunteers, 10 male, 10 female, all of whom had previously undergone five preliminary hypnotic training sessions.

2. Experimenters

Fourteen of the above subjects were allocated to I.M. who became their regular hypnotist-experimenter, the remaining six

when possible he arranged to be both present at a session in which case the non-hypnotist took over the duties of note-taker.

3. Procedure

Each subject came once a week for 10 weeks for a one-hour session. When the subject was comfortably settled in his easy chair our first job was to get him securely hypnotised. Standard methods of induction were used, ordinarily the subject would be told to fixate a certain spot on the centre lamp-fixing while the hypnotist would count slowly to ten interspersing his counting with suggestions of drowsiness. After a while we found that most subjects could be put into a trance if the hypnotist merely snapped his fingers while they were gazing up at the light. Once hypnosis had supervened much further effort was expended in trying to deepen and strengthen the trance state. Sometimes the subject would be asked to estimate on a six-point scale the level of trance he had attained.

When induction was complete, and this might easily occupy the first 10 minutes of the session, the subject would be blindfolded. Although Rýzl preferred to rely on screening we had decided that blindfolding would permit greater flexibility. This, as we soon discovered, demanded a certain amount of improvisation. Thus, we began by using a pair of underwater goggles with the eye-pieces blacked out and the rubber surrounds stuck down to the subject's face at the critical region of cheek and nose with strips of 1-inch oxide plaster. Then, during the third session, for the sake of greater comfort for the subject, we introduced a blindfold made from a double thickness of felt fastened with elastic and stuck to the subject's face as before. Finally, during the seventh session, we substituted for this a specially designed face-mask which we believed offered the greatest security with the least discomfort. It was made of wire-mesh covered over in a double thickness of felt and came down under the subject's chin and was fastened by elastic round his head and neck. It also protruded at the forehead to allow a free circulation of air.

A tray was then set before the subject, resting on the arms of his easy chair, and the informal exercises for that session would commence. These involved the subject in trying to obtain an impression of some target (a picture, an inscription, an object, etc.) that had been placed on his tray or in trying to receive a colour impression merely by touching some coloured material. For these informal exercises we improvised continually, always with a view to stimulating as much as possible the subject's

with the subject, tell him how he was doing, exhort him or caution him as the situation demanded:

The second half, roughly, of each hourly session, was devoted to the critical tests (see below). During a critical test there was, of course, no interchange between subject and experimenter. Ordinarily, the test would be announced and then nothing further would be said until the subject had finished giving his responses. Occasionally, however, the experimenter found it necessary in view of the semi-stuporous condition of some subjects to interject some remark such as 'have you finished yet?' or 'take your time', etc. Originally we had decided not to give knowledge of results on any of the critical tests. For the sake of morale, however, we did later make a practice of telling the subject every time he scored a direct hit on any of the 'selective answer' tests. A verbatim record, as near as possible, was kept of everything the subject said throughout an entire session and, in addition, his responses on the 'object' and 'picture' tests (see below) were tape-recorded.

As an incentive, half-a-crown was awarded for each direct hit plus a lump sum of ten shillings at the end for goodwill. Despite the frustrating nature of the work subjects were most co-operative and we were pleasantly surprised to find that there was little difficulty in maintaining good motivation and morale.

4. The Tests

In all, 6 critical tests were used: 3 of the 'selective answer' kind, 3 of the 'open' kind. Dice were thrown at each session to determine in which order the tests should be administered (at first we gave the tests in what we assumed would be an order of difficulty but we discovered that the use of a fixed order resulted in subjects anticipating their responses before the next test had been announced). Dice were also thrown to determine which particular target would be used for each test. Each subject was given one trial only on each of the 6 tests described below and, since there were 20 subjects each doing 10 sessions the number of responses recorded per test was: $20 \times 10 = 200$.

(1) The Clock Test

The clock used was an ordinary domestic clock with a circular dial of 12.5 cm diam. set into a square frame. The hours were each marked with an arabic numeral. The following extract

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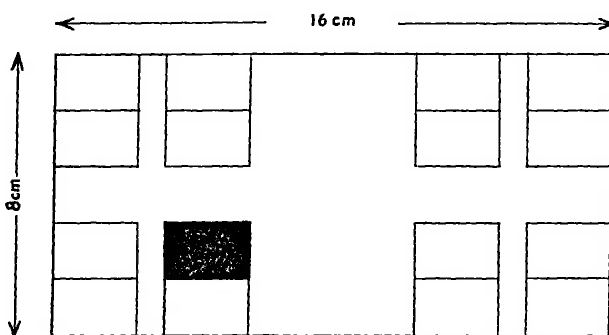
from the Instruction Sheet circulated beforehand to all subjects explains the exact nature of the task:

'A clock will be set before you on your tray with its big hand always pointing to the 12 o'clock position and its little hand pointing to one of the hour positions as randomly determined anew on each occasion. YOUR TASK is to ascertain which of the 12 positions the little hand is pointing to. Your initial ascertainment must be done without touching the clock but you may then run your fingers over the glass cover and revise your answer if you wish. Your revised response will then be accepted as final for the purpose of scoring.'

A record was taken after each trial of the actual position of the hour-hand and the subject's call.

(2) The Block Test

FIG. 1. Plan of Matrix to scale showing black target-block at C2.



Notation of Matrix:

$\frac{1}{2}A_1^2$ $\frac{1}{2}B_1^2$
 $\frac{1}{2}C_1^2$ $\frac{1}{2}D_1^2$

The blocks used in this test were plastic toy building blocks, 2.4 cm x 1.6 cm x 1 cm high, manufactured by Lego Ltd who kindly supplied us free of charge with sets of coloured blocks that had all been extruded from the identical mould to make sure that any surface irregularities should be equalized as between the different colours. The following extract from the Instructions Sheet explains the exact nature of the task:

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'The target material in this case consists of a 4 x 4 matrix of "Lego" blocks affixed to a green Lego base. All the blocks except one are white, the one odd block is black and its position in the matrix will be randomly determined anew on each occasion. YOUR TASK is to pick off with your fingers the black target block, though you may finger all the blocks as much as you please until you have located it. Note that the matrix is so placed as to fall readily into four 2 x 2 sub-matrices and some credit will be given for selecting the correct quadrant even when the target unit is incorrect.'

The position of the target-block and the position identified by the subject was recorded at each trial.

(3) The Colour-Card Test

The target materials were made up from Windsor & Newton gummed colour papers stuck on to 2" x 2" squares of card. Five different colours were used as targets but to discourage guessing the subjects were not told which five colours would be used. For purposes of scoring an identification was counted as correct if the appropriate colour-name Blue, Red, Orange, Yellow or Green was ascribed to the appropriate target. Once again the exact nature of the task is best explained by quoting directly from the Instructions Sheet:

'Five squares of coloured card will be set out in front of you in a row, mounted on black paper and covered over with a transparent perspex sheet. One of these squares is different from the other four. YOUR TASK is to say whether the odd square is 1st, 2nd, 3rd, 4th or 5th from the left, to identify its colour and to identify the different colour of the four other squares. Both the position of the odd square and the particular combination of colours used will be randomly selected anew on each occasion. You are free, if you wish, to run your fingers over the perspex sheet.'

At the termination of each trial a record was made of the 3 critical independent variables of the target layout and of the subject's response on each.

(4) The Word Test

The five target words were:

A. BANANA B. FREEZE C. KISS D. GOOD E. THUMP

These words had been chosen arbitrarily but with the special proviso that no two words should have any letters in common. We had hoped this would facilitate matching of the subject's responses when it came to analysing the results. Words were made up from 1½" high, thick solid black, capital, sans-serif

Sheet:

'A single English word in large black capitals of standard dimensions on a white ground will be presented to you on the tray where it will be covered over by a transparent perspex sheet. YOUR TASK is to read the target word or, failing that, to mention as many of the letters belonging to it as may come through to you. Note that only 5 different words will be used as targets, the particular target word on each occasion being randomly selected anew on each occasion. You may, if you wish, run your fingers over the perspex cover.'

At the end of each trial a record was taken of the target word and of the sequence of letters given in the subject's response.

(5) Picture Test

The 5 target pictures used were as follows:

- A. Cramond Harbour: Large colour-photo of waterside scene on a calm sunny day but with no human figures. Three small yachts are visible without sails, there are trees, grass, rocks, a swan and a stone house in the background on extreme left.
- B. Charlie Chaplin: Black-and-white full-face still of Chaplin from 'City Lights'. Figure shown from above the waist.
- C. Little girl: Coloured magazine advertisement showing small girl in red dress eating soup, spoon in mouth.
- D. Music Room: Coloured photo of an interior. Foreground: 'cello resting on chair, music open on music stand, books lying on desk at extreme right. Background: grand piano to left with metronome on top, picture on rear wall of old city with canals, potted indoor tree in right corner. Carpet: deep pink ground with elaborate scrollwork pattern in buff.
- E. Lady with Ginger Hair: A full-face colour portrait-photo from *Vogue* of Jane Asher. Long loose ginger hair falling about shoulders, broad grin, arms akimbo, wearing mauve jumper and green tartan skirt.

Instructions Sheet:

'The targets for this test are various photos such as one finds in illustrated magazines. The target picture will be laid in front of you on the tray and YOUR TASK will be to describe it as fully as you can. Touch will not be used. Note that only five different pictures will be used, the particular target being randomly selected anew on each occasion.'

- A. Brandy glass.
- B. Flower-pot.
- C. Black doll: a realistic jointed doll in sitting position wearing off-white coat and hood with red trim.
- D. Brass fish: an articulated Indian brass fish with 'ruby' eyes.
- E. Egg: a hard-boiled egg in shell.

Instructions Sheet:

'Here the target is some object (which might be anything within reason providing that it has no characteristic odour and emits no sounds) which will be placed on the small table to the right of your chair on a felt pad. YOUR TASK will be to describe the object as fully as you can and to try whenever possibly to identify the object by name. Note that only 5 different objects will be used, the particular target being randomly selected anew on each occasion. We regard this as the most important of the 6 tests.'

Precaution: The target material for all the tests other than the clock and the Lego Block Matrix were kept in a locked suitcase throughout the whole period of the experiment except when actually in use. Coded symbols only were used in recording results in the notebook to prevent leakage of information.

III. RESULTS**1. The Selective Answer Tests****TABLE I. CLOCK TEST**

(a) Overall totals:	$n = 200$
(i) Direct Hits (D.H.)	$p = 1/12$
Total	= 25
M.C.E.	= $200/12 = 16.6$
Dev.	= +7.83 (corrected for continuity)
S.D.	= 3.9
C.R.	= +2.01 $P < 0.05$
(ii) Divergence Scores (S)	
Total	= 534
M.C.E.	= $3 \times 10 \times 20 = 600$
Dev.	= +66
S.D.	= $\sqrt{194/6} = 25.16$
C.R.	= +2.62 $P < 0.005$

(v)

(i) Distribution of all 200 calls:

Divergence from Target Position A_0							
	A_0	A_1	A_2	A_3	A_4	A_5	A_6
f_o :	25	40	31	35	30	27	12
f_e :	(16.6)	(33.3)	(33.3)	(33.3)	(33.3)	(33.3)	(16.6)
Σ 200							

where f_o = observed frequency of calls
 f_e = expected frequency of calls
 χ^2 (d.f. = 5) = 7.46 N.S.

(ii) Distribution of Extreme Calls:

	A_0, A_1	A_5, A_6	Σ
f_o :	65	39	104
f_e :	(52)	(52)	(104)

 χ^2 (d.f. = 1) = 6.30 $P < 0.01$ (c) Individual Scores (S_d & D.H.) $n = 10$ trials each

		Rank Order of S_d Score																				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Σ
S_d :		15*	18*	22	22	22	22	23	25	25	27	27	27	28	28	31	31	34	35	36	36	534
D.H.:		3	1	4*	2	1	0	2	3	1	2	1	1	1	1	1	0	0	0	1	0	25

S_d : M.C.E. = 30, S.D. = 5.63
D.H.: M.C.E. = 0.83, S.D. = 0.874
* = $P \leq 0.01$

(d) Session by Session Totals:

 $n = 20$ Ss

		Serial No. of Session										Σ
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	
S_d :		57	46	66	41*	58	60	57	49	42*	58	534
D.H.:		1	3	2	3	3	0	4	3	3	3	25

S: M.C.E. = 60, S.D. = 7.96
D.H.: M.C.E. = 1.6, S.D. = 1.24
* = $P \leq 0.01$

(e) Position Preference in Calling:

		Call ('o'clock')												Σ
		1	2	3	4	5	6	7	8	9	10	11	12	
f_o :		9	21	19	19	24	11	22	21	19	12	16	7	200

f_e for all positions assuming no preference = 16.6
 χ^2 (d.f. = 11) = 20.56 $P < 0.05$

(1) The Clock Test

Scores on this test can be reckoned either in the usual way, in terms of the number of direct hits, or, more sensitively, by means

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of a divergence score (Fisk & Mitchell 1953). Here we present both analyses. Table I (a) (i) gives the overall total for Direct Hits which yields an above chance deviation of Critical Ratio 2.01. This, on a one-tail test, is significant beyond the 5% level of confidence. The overall Divergence Score is given in Table I (a) (ii). Note that for a clock-target the mean divergence will be 3 hrs per trial, hence on 200 trials the Mean Chance Expectation will be 600 hrs. Scores less than 600 represent above chance scoring. Here we have an overall above chance deviation with C.R. = +2.62 and, on a one-tail test, this is significant beyond the 0.5% level of confidence.

The Distribution of calls over the 6 possible divergence categories is shown in Table I (b) (i). On the hypothesis that the subject is tending in the direction of the target position we would expect to find a pile-up of responses in the neighbouring categories and, conversely, a tailing-off of responses towards the opposite end. Table I (b) (i), however, shows that the full distribution of responses does not differ from chance expectation, presumably because the middle categories contribute virtually nothing to the overall χ^2 index. In Table I (b) (ii), therefore, we have presented the results of a χ^2 analysis of the extreme calls only which gives a value of 6.30 for one degree of freedom. Since, on a one-tail test, a χ^2 index of 5.41 may be taken to correspond to a P of 0.01, for one degree of freedom, such a result is easily significant at the 1% level.

Individual scores have been set out for easy inspection in Table I (c). Here it can be seen that 2 subjects attain divergence scores that are individually significant at or beyond the 1% level. A calculation using the Poisson formula for expected frequency of rare events reveal that the odds against finding even 2 subjects in a sample of 20 with scores of this magnitude is about 50-1. We may also note that a third subject attained a score of 4 out of 10 direct hits. An exact probability calculation, based on the binomial formula, indicates that a score of not less than this magnitude cannot be expected to occur by chance more than once in a hundred times.

Table I (d) presents the session by session totals in terms both of divergence scores and direct hits. It can be seen that in 2 out of the 10 sessions the overall total exceeded 2 S.D.s above chance expectation but, alas, no progressive trend in scoring emerges. This table is, of course, critical for the training hypothesis.

We have thought it worth including, in Table I (e), the distribution of calls relative to the clock face. A χ^2 analysis shows

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is due mainly to the unpopularity of the 12 and 1 o'clock positions plus the popularity of the 5 o'clock position. This bias is an unfortunate weakness in what otherwise makes an excellent test of ESP. A similar χ^2 analysis was carried out, though not shown here, on the distribution of *target* positions and this demonstrated that there was *no* significant deviation from the random distribution that was intended as a result of tossing dice. We also examined the matrix of target/call plottings for the possibility that subjects might be making confusions of symmetry in guessing at clock positions. No such tendency, however, could be discerned.

(2) The Block Test

The probability of a direct hit, on this test, is $1/16$. The test, however, is specially designed to permit an analysis in terms of whether the responses fall within a specified 'target-area'. An analogy would be that of taking a target used in archery and attempting to find out whether there was any tendency for the arrows to converge towards the centre by describing progressively larger circles about the centre and then estimating the expected frequency of shots inside as against outside the given circle. From Table II (a) we see that, while the number of *direct* hits fails to reach an acceptable level of significance, an analysis in terms of the octant ($1/8$) and quadrant ($1/4$) divisions of the target-matrix *can* be considered significant at the 5% level, if we take χ^2 of 2.71 (for d.f. = 1) as corresponding to a P of 0.05 on a one-tail test.

Table II (b) presents the distribution of individual scores in terms of how many subjects scored totals of either 1, 2, 3 ... or 10 direct hits in their 10 trials. It can be seen by inspection that the observed frequencies do not differ significantly from the series of expected frequencies listed in brackets beneath as estimated on a

TABLE II. BLOCK TEST

(a) Overall Totals:

$n = 200$

	D.H.	Oct.	Quad.	Half
f_o :	18	33	61	108
f_e :	(12.5)	(25)	(50)	(100)
χ^2 (d.f. = 1):	2.58	2.93*	3.23*	1.28

where D.H. = Direct Hit

Oct. = within same octant as target-block

Quad. = within same quadrant as target-block

Half = within same left-right bisection as target-block

* = $P < 0.05$

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	0	1	2	3	4	5-10	Σ
f_o :	8	9	1	1	1*	0	20
f_e :	(10.49)	(6.99)	(2.10)	(0.37)	(0.04)	(0.01)	(20.00)

where f_o = observed number of subjects with specified D.H. score
 f_e = exact probability estimate of number expected by binomial distribution

* = $P < 0.005$

(c) Session by Session Totals:

$n = 20$ Ss.

	Serial No. of Session										Σ
D.H.:	0	3	2	3	1	2	2	4*	1	0	18
Quad.:	5	8	4	9	5	6	7	8	4	5	61

D.H.: M.C.E. = $20/16 = 1.25$, S.D. = 1.08

Quad.: M.C.E. = $20/4 = 5$, S.D. = 1.94

* = $P < 0.05$

binomial distribution where $p = 1/16$, $q = 15/16$. The one surprise is that even one subject should score as many as 4 direct hits out of 10. The exact probability calculation given by the binomial formula indicates that a score of not less than this magnitude cannot be expected to occur by chance more than once in about 400 replications. Moreover, a further calculation based on the Poisson distribution, indicates that odds against finding even one such case in a sample of 20 subjects is more than 20-1.

Finally, Table II (c) gives the session by session progress chart in terms of the incidence both of direct hits and quadrant hits. As shown, in only one session was the number of direct hits in excess of 2 S.D.s above chance expectation and once again we look in vain for any signs of improvement over the 10 sessions.

(3) Colour-Card Test

As previously explained, this test was only partially of the selective answer type, inasmuch as subjects were not told which colours would be used as targets. Optimistically, we had been hoping that results would be significant even if analysed as if the test had been selective i.e. as if $p = 1/5$. When this proved not to be the case we decided to make an empirical estimate of p based on the observed proportion of guesses falling within the target range. Now, since each subject makes two colour calls (one for the odd card, one for the others) this gives a total of 400 colour calls. But only 336 of these correspond to our target colours. Hence we may say that the probability of being correct on any given colour-

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colour combination (i.e. correct on 'odd' and on 'others') was $p_1 \cdot p_2 = (1/5 \times 336/400)(1/4 \times 336/400) = 0.035$. And since the odd card could be in any of 5 different positions the chances of being correct both on colour combination and position of odd card was: $0.035 \times 0.2 = 0.007$. From Table III (i), it can be seen that 4 direct hits were recorded as against a chance expectation of 1.4. By the Poisson analysis for rare events this is only just significant at the 5% level. Separate analyses in terms of position only and colour combination only, set out in Table III (ii) and (iii), respectively, gave non-significant results.

TABLE III. COLOUR-CARD TEST

Overall Totals	
(i) Direct Hits on Position and Colour Combination	$n = 200$
Total: = 4	
M.C.E. (where $p = 0.007$ see text) = 1.4	
P (=prob. of getting at least 4 hits in 200 trials on Poisson distribution for rare events) = 0.05 approx.	
(ii) Direct Hits on Position only.	$n = 200$
Total = 50	
M.C.E. = $200/5 = 40$	
Dev. = +9.5 (corrected for continuity)	
S.D. = 5.66	
C.R. = +1.68 N.S.	
(iii) Direct Hits on Colour Combination only.	$n = 200$
Total = 12	
M.C.E. (where $p = 0.035$ see text) = 7	
Dev. = +4.5 (corrected for continuity)	
S.D. = 2.6	
C.R. = +1.73 N.S.	

Comments on the Results of the Selective Answer Test

Results on the Clock Test and on the Block Test definitely suggest the operation of x non-random factors. It is perhaps also worth mentioning that an n of 200 is low in comparison with that customary in most parapsychological experiments of a quantitative kind so that a relatively high rate of scoring was necessary to reach the significance levels here attained. On the Colour-Card Test, however, it is doubtful whether anything more than mere guesswork was involved. This was a big disappointment to us, the more so as this test promised well in the preliminary informal try-out. No sex differences emerged from any of these 3 tests.

After all the 200 response words had been tabulated under their respective target words various criteria of similarity were applied (prevalence of certain key letters, etc.) to see whether the target words had had any influence on the responses given. In general, the result was completely negative except in a few special cases listed below where it certainly looks as if something more than mere coincidence was responsible, although in the nature of the case no estimate of probability can be adduced. These special cases were as follows:

Target Word	Response Words (where each response represents a separate occasion)	
FREEZE	FREEZE	FRIENE
GOOD	GOOD	WOOD
THUMP	HUMP	

(5) The Picture Test

As previously stated, the subjects' spoken impressions were recorded on tape. The tapes were then handed to a departmental secretary (who was ignorant about what targets we had been using) with instructions simply to make a typewritten transcript of all the protocols. The final set of these protocols, duly coded, were then submitted, together with the actual targets, to a colleague on the staff of this department, whose duty it was to act as an independent judge in matching protocols against targets. We instructed this judge to rate each protocol on a six-point scale for resemblance where 0 = a perfect description of one of the target pictures and 5 = impossible to identify with any of the target pictures. Results were as follows: In all 199 separate protocols were collected, but of this number in only 91 cases was any matching attempted. Of the matches only 16 corresponded with the target for that occasion as against a chance expectation of $91/5 = 18.2$; clearly, a non-significant result. We may note that of the 91 matches more than half (49) involved descriptions of outdoor scenes, yet less than 1/5th (9) were given in response to Picture A. 'Cramond Harbour'.

The 3 protocols that were given the highest rating for resemblance were each matched against a picture *other* than the actual target. For the sake of interest here they are in full:

'Picture of man's face. Dark . . . moustache . . . looks old-fashioned'
Match: B Target: E

very light picture... something on right-hand side like tree, symmetrical and very light coloured... something, a small bit of red in the middle, may be a person... piano on left-hand side... I see piano again and room... window open at back... a light-coloured carpet, blue and buff elaborate pattern'

Match: D Target: C

'Picture of the sea... coast... cliff coming down... rocks... seals? ... sailing ships with no sails.'

Match A Target: E

(6) Object Test

The matching procedure for this test was exactly the same as in the case of the previous test. Results were as follows: For only 57 protocols was a matching attempted. Of this number only 9 corresponded with the actual target for that trial as against a chance expectation of $57/5 = 10.4$, again a clearly non-significant result.

The following target objects were mentioned once but not in conjunction with the appropriate target: Flower-Pot, Brandy-Glass, Egg. On one occasion an egg-cup was mentioned when the target happened to be an egg.

Comments on the Results of the Open Tests

Apart from the few word-responses listed there was no satisfactory evidence of anything beyond mere guesswork on any of the three open tests. The protocols on the picture test which we have quoted in full look at first as if they might be displaced hits but none of them are sufficiently circumstantial to warrant such a conclusion. The utter failure of the object test which, in our Instructions to the subjects, we had stressed as being the most important of the battery was an acute disappointment.

3. Individual Differences

In the course of our investigation it definitely seemed to us that some subjects showed more aptitude for the task than others but none proved in the end to be uniformly superior on all tests or at all times so there is little objective evidence to support this impression. Two subjects, however, are worth special comment in this connection. Mr R.C. was responsible for two of the five exceptional word responses: GOOD and HUMP and, in addition, made the score of 4 out of 10 direct hits on the clock test. Oddly enough he was never a good hypnotic subject, it was hard to bring him into any depth of trance, conceivably, but for this handicap, he might have done much better. The other note-

no special signs of any unusual gifts. She then produced one outstanding performance but although thereafter we devoted particular attention to her, always arranging it so that both experimenters were present at each of her subsequent sessions, we never succeeded in eliciting again anything at all comparable. She was, however, responsible for the score of 4 direct hits out of 10 trials on the Block Test, which, on an exact probability calculation, corresponds to a P of 0.0025.

IV. DISCUSSION

Under this heading we shall consider the following questions:

- Q.1. From an examination of the results we have presented above, are we really justified in rejecting the null assumption that they were due to chance alone?
- Q.2. If the answer to Q.1 is 'yes' are we really justified in invoking ESP or is there some 'normal' explanation that could conceivably account for the findings?
- Q.3. If the answer to Q.2 is 'yes' does our investigation lend any support to the claims that have been put forward for the Ryzl technique?

A.1 In experimental psychology a significance level of 5% is usually considered sufficiently stringent to justify rejecting the null assumption. But the experimental psychologist is usually working within a fairly well-established framework of fact and theory. This, unfortunately, is not the case in parapsychology where accepting a paranormal hypothesis means, *ipso facto*, challenging one or more well-entrenched assumptions regarding the limits of what is physically possible. Accordingly it is proper that a much more stringent level of confidence should be demanded if the alternative to accepting the null hypothesis is to embrace a paranormal explanation. On this reckoning the case for rejecting coincidence as an explanation for our own findings is far from overwhelming. Only two out of the three quantitative tests attained even a modest level of significance; the strongest single piece of evidence against the theory of coincidence was the overall divergence score on the Clock Test which gave odds of 200-1 against chance. Apart from this, the main case against a chance hypothesis rests on the five exceptional word responses and the details omitted here for reasons of space of Miss A.D.'s 4th session.

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The 'Ryzl Technique' for Training ESP Subjects

... an investigation of this kind there are two main spurious effects against which one has to be continually on one's guard: (a) inadequate blindfolding of subjects or screening of objects and (b) inadvertent cues imparted by the experimenter. Since the prime purpose of our investigation was to train ESP rather than to demonstrate, *ab initio* so to speak, the genuineness of ESP, we did not bother to insure that our conditions were the most rigorous possible believing that there would be ample opportunity for fool-proof demonstration later on once we started making progress. Now, of course, endowed with hindsight, we realize that we ought to have given more thought to just how much could be salvaged from the wreckage if the training aspect of the investigation were to come to naught. For example at least one of the critical tests should have been run under double-blind conditions which, at one stroke, would have taken care both of (a) and (b). The double-blind condition also eliminates a telepathic as opposed to a clairvoyant interpretation of any positive results. Very late in the day we did, in fact, introduce a supplementary test under double-blind conditions. This consisted of one complete pack of Zener cards, each card separately enclosed in its own envelope and duly coded after shuffling. Each of our subjects was required to guess his way through the pack, lifting each envelope up one at a time and proceeding at his own rate. This was done twice over, on the 9th and 10th sessions, before the final decoding. Alas, scoring was found to be purely at a chance level.

As regards (a) the problem of blindfolding, here again our inexperience betrayed us. Had we used our face-mask right from the start we believe we could defend ourselves against any criticism on this score, but it seems to be almost an axiom of conjuring that there is no completely foolproof method of blindfolding the eyes alone.¹ Alternatively we could have worked instead with screens although even then one has the problem of transporting the target

material into position with complete security. Moreover at the parapsychical level Ryzl is of the opinion that screening is least prejudicial to success when it is either directly in contact with the target, as in the case of an envelope, or directly in contact with the subject's eyes, as in the case of a blindfold, while the intermediate position represents a maximal impediment. (Private communication).

We would like to mention that so far as we could tell blindfolding made no *actual* difference to our subjects' performances. With adults at least there would seem to be no residual vision once the eyelids are closed under hypnotic suggestion.¹ If Miss A.D. had been peeping from under her blindfold in her extraordinary session 4 it is hard to understand why she did not do so much more effectively on the many occasions since the termination of the experiment when we deliberately refrained from using any blindfold.

As regards (b) the question of minimal sensory information unwittingly signalled by the experimenter, what psychologists call the 'Clever Hans' effect with allusion to the exploits of a certain so-called 'calculating' horse, it is impossible to exclude such a possibility completely with any set-up short of the double-blind condition. Naturally, being fully alive to this possibility, we took all reasonable precautions against it but, as explained under Procedure, we found that we had to relax occasionally our rule never to say anything during a critical test. Here again the advantages of a double-blind test is that it allows the experimenter to say anything he thinks necessary by way of encouragement or reassurance at no risk.

A.3: As we have already seen, no progressive trends of any kind were anywhere discernible in our results and not one subject has yet emerged with even a rudimentary skill in the use of ESP. From this point of view it cannot be said that our investigation offers any corroboration of the claims which Dr Ryzl has made, and still persists in making, for his training technique, on the basis of his own experiences. The interesting question is what accounts for this striking discrepancy? Lack of reproducibility has become such a notorious bugbear of parapsychological research generally that we feel no effort should be spared to throw whatever light one can on this vexatious question.

¹ The same cannot however be said to hold in the case of young children as J.B. discovered to his dismay when he began experimenting on blind colour discrimination using his 7-year-old daughter. But children are notoriously difficult to hypnotize at all; securely.

¹ We are indebted to Mrs K. M. Goldney for drawing our attention to a passage in T. H. Hall's *The Strange Case of Edmund Gurney* (Duckworth 1964), pp. 115-16 concerning the exploits of a professional conjuror, one Kuda Bux, an Indian, who, in 1935, gave a demonstration of eyeless sight after submitting to the most elaborate blindfolding precautions in the presence of such notabilities as William McDougall, C. E. M. Joad, S. G. Soal, Harry Price, and Mrs Goldney herself. Yet when later he was asked by Mrs Goldney to let his head be put into a loose shoe-bag the magician was forced to decline! We are further indebted to Dr Alan Gauld for pointing out to us an early article by Eleanor Sidgwick 'On Vision with Sealed and Bandaged Eyes' (*Jour. S.P.R.*, Vol. 1, 1884, pp. 84-6) describing Richard Hodgson's experiments on himself when he successfully duplicated the performance of a young boy who, it was claimed, attained eyeless sight when under hypnosis.

In the present instance three possible sources of the discrepancy must be considered: (1) In the subjects, (2) in the experimenters, and (3) in the methods. So far as (1) is concerned, the subjects in both cases were drawn mainly from a student population and it seems unlikely that British students are any less gifted parapsychically than their Czech counterparts. Nor have we any reason to suspect that our subjects might be more sceptical initially of the possibility of ESP, in other words that we had more 'goats' among our group, for it seems intrinsically improbable that our subjects would have sacrificed so much time for no better purpose than to vindicate their disbelief. We feel therefore that unless we were very unlucky in our sample, we can probably discard source (1).

As regards (2), however, it has often been remarked that where parapsychical phenomena are concerned a particular experimenter may, in some subtle way, be just as indispensable to a particular sort of manifestation as the ostensible subject. The only satisfactory way of settling the query in the present case would be for Rýzl to come to Edinburgh and tackle our subjects. Unfortunately, until the Czech authorities adopt a more liberal policy towards the right to travel this course of action is not open to us.

This brings us finally to (3). Here the most plausible suggestion is that, owing to our lack of skill and experience in hypnotism, we were unable to make competent use of the training procedure. Thus, as we have already explained, Rýzl lays great emphasis on the capacity for vivid visual hallucination as the essential prerequisite for success in ESP. We must admit that none of our subjects were capable of hallucinating with a degree of realism that would make the experience comparable, subjectively, to an actual perception. On the other hand, the two best visualisers in our group were both most disappointing when it came to the ESP tests while, on the contrary, our two most hopeful ESP subjects (R.C. & A.D.) were neither particularly accomplished visualisers. Yet Rýzl insists that his subjects did learn to tell the difference between the merely imaginary vision and the true veridical hallucination. Thus he writes with reference to his object tests: 'real "guessing" occurred rarely, if ever. Usually the subject either asserted that he did not see anything, or he described his visions and then they were—as a rule—veridical.' (Private communication.) Our subjects, on the contrary, as we have already seen, hardly ever declined to describe their impressions in this situation but on no single occasion were these veridical. Yet, in attempting to arrive at some conclusion on this point, it must not be forgotten that, at the beginning of this academic year both

authors were quite new to the Rýzl training procedure. It is scarcely surprising if Rýzl with years of experience behind him can approach the task with very much greater confidence and authority and this in turn may well inspire his subjects to greater achievements.

V. SUMMARY AND CONCLUSIONS

The attempt we have here described to validate the Rýzl technique for the training of ESP under hypnosis was unsuccessful: there were no indications that our subjects were in fact developing any ESP ability as a result of the treatment to which we were exposing them.

Some evidence, however, was presented and discussed which strongly suggests to us that some ESP was operative in the course of the investigation, notably in the Clock Test, the Block Test, the Word Test and in the performance of one particular subject Miss A.D.

The authors are of the opinion that, all things considered, further work in this direction would be warranted. It would be especially valuable if, during the next academic year, parallel experiments could be run simultaneously in Prague and Edinburgh with a view to discovering just when and where and why any discrepancies occur. Even if it may be very premature to talk of *training* ESP, in the sense of a method of eliciting it from any normal subject, it would be a considerable advance to have a better method of *cultivating* whatever potential talent may be around.

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